[Excerpted from Chapter 5 of draft Revised Phase II Report]

5.1 Actions and Assurances for 1998-99

During the period before the final EIS/EIR and ROD are issued in the fall of 1999, the CALFED agencies will continue to make progress in implementing, coordinating, and expanding ongoing project specific actions to provide additional benefits for environmental, urban, and agricultural users, where consistent with the CALFED Bay-Delta Programmatic framework. Project specific actions to pursue include:

- Complete programmatic implementation plan
- Develop and implement the annual CVP/SWP Operations Plan
- Expand south of Delta groundwater storage
- Facilitate additional short-term water transfers
- Improve coordination of Category III, Bay-Delta Act, CVPIA and other expenditures for ecosystem restoration projects
- Initiate environmental documentation and feasibility analysis for projects that could be implemented early in Stage 1
- Target and increase funding for water conservation, reclamation, water quality, and floodplain and watershed management programs
- Seek continued funding for Delta levees program.
- Issue final State Water Resources Control Board water rights decision to allocate responsibility for meeting the 1995 Water Quality Control Plan
- Extend the Bay-Delta Accord to provide operational and environmental stability through December 1999, at which time CALFED anticipates the ROD will be issued
- Resolve permitting issues and, as appropriate, initiate south Delta improvement actions
- Incorporate ongoing and planned monitoring and studies into the CALFED Comprehensive Monitoring Assessment and Research Program (CMARP)

Attachment B contains a short summary of each action.

5.2 Stage 1 Actions

Stage 1 is defined as the seven year period commencing with the final decisions on the Programmatic EIS/EIR. Agreement on Stage 1 actions is only one part of the decision for a preferred program alternative but, it is important that these actions achieve balanced benefits and

lay a solid foundation for successful implementation of the Program.

The following pages provide more detail on potential actions for Stage 1. **These actions will be more fully developed as parts of the preferred program alternative for the *Revised Draft Programmatic EIS/EIR* and for the *Final Programmatic EIS/EIR.***

Adaptive management is an essential part of the implementation strategy for every program element to allow necessary adjustments as conditions change in future stages of implementation and as more is learned about the system and how it responds to restoration efforts. Consistent with the concept of adaptive management, some actions may need to be refined within the time frame of Stage 1 to reflect changing conditions or new information.

The outcome of and certain sites for Stage 1 decisions will not be known until additional information, including need for mitigation, is available and until the options to carry out these Stage 1 proposals have undergone environmental review. Consequently, the outcome could be altered as a result of that second tier environmental review and mitigation measures imposed as a part of those actions. However, if the impacts from the actions in Stage 1 have been included in the Programmatic EIS/EIR, the subsequent environmental documents can tier off the Programmatic document for cumulative and long-range impacts of the Programmatic decision.

Each potential action in the following Stage 1 list includes an estimate (in parenthesis) of when the action may occur within Stage 1. For example, "(yr 1)" indicates the action is expected to occur in the first year following the final decisions on the Programmatic EIS/EIR.

CALFED will continue work between the Revised Draft EIS/EIR and the Final EIS/EIR on grouping the Stage 1 actions into a series of bundles (packages) which can provide additional assurances for balancing benefits. For example, a package of actions in the Delta could include levee work, habitat improvements, water quality work, and facilities and operations to improve water supply reliability. Packages for some actions may be geographical, based on timing, or other grouping. Linking the actions would help assure that they all move forward together. These may be linked within the same project EIS/EIRs, tied by contractual documents, dependent on the same funding, or other means.

Assurances & Institutional Arrangements

An assurances package is a set of actions and mechanisms to assure that the Program will be implemented and operated as agreed. The assurances package will include mechanisms to be adopted immediately as well as a contingency process to address situations where a key element of the plan cannot be implemented as agreed. While the principles for the assurances package will be substantially complete before beginning Stage 1, many details remain to be finalized early in Stage 1 after the federal ROD and the state Certification.

1. Finalize coordination among agencies or new entity (yr 1-3); e.g., provide for ecosystem restoration authority within the individual CALFED agencies or in a new organization with responsibility for ecosystem restoration.
2. Expand on the conservation strategy (yr 1-3); next steps will implement mechanisms that will provide regulatory certainty for specific projects or bundled projects whose actions were identified in the ROD for completion during Stage 1.
3. Recommend legislation, if necessary, to implement new institutional arrangements or facilitate program implementation (yr 2-3). Legislation could serve to create a new entity or modify water transfer law and statutes to facilitate an appropriately protective water transfer framework recognizing law that may exist at that time. For any legislation to implement new institutional arrangements that would facilitate increased water transfers out of the Delta, include reaffirmation and enhancement of existing laws such as the Delta Protection Act, the Feigenbaum Act, the Watershed Protection Act, and the Protected Areas Act (Water Code §§1215, 1222, 1216, and 1217 [a]).
4. Incorporate the final State Board's water rights decision for allocation of responsibility to meet flow requirements for Water Quality Control Plan 95-IWR (May 1995) in water transfer and operational rules.
5. Implement a CALFED environmental documentation, mitigation, and permit coordination process (yr 1-7).
6. Implement and revise contingency response as needed (yr 1-7).
7. Develop guidelines and support legislation for federal Good Samaritan protections (yr 1-2).

Finance

The financial package will seek to finance the preferred program (total Program costs for improvements, mitigation, and ongoing annual operating and maintenance costs) through a combination of federal, state, and user funds. This financing will be needed over several decades as the various parts of the preferred program alternative are implemented, operated, and maintained. An agreement on the financial principles including the benefits-based approach, guidelines for public/user cost split, provisions for crediting for other parallel efforts, provision for repayment of federal/state costs where appropriate, and cost allocation methodology or strategy will be included in an implementation agreement prior to Stage 1. These principles will recognize public and private benefits derived from water quality, environmental protection, flood control, recreation, and a reliable water supply. Stage 1 establishes the financial package for use in all stages.
Cost allocation methodology or strategy will be from;

1. Establish reliable short-term and long-term funding for each program element and for each package of Stage 1 actions (1-7):
   - Finalize cost-share agreements (yr 1).

- Finalize user fees linked to long-term assurances (yr 1).
- Seek federal authorization/appropriation and seek authority to sell state bonds (yr 1-7).

Monitoring, Research, and Adaptive Management

Establish monitoring for all program elements that focuses on obtaining data on a timely basis, providing interpretation of data, and maintaining data in an accessible and useful form. The monitoring, assessment of data, and resultant need for adaptive management are required throughout the CALFED Bay-Delta Program. The first stage refines the monitoring system and procedures which will continue in subsequent stages.

1. Periodic review and refinement of the monitoring plan (CMARP) including all elements of the Program (yr 1-7).
2. Define conceptual model of Delta watershed as it relates to fish survival and other indicators of ecosystem health. Include model variables for all significant stressors, such as diversion effects, commercial fishing, exotic species, hatchery impacts, and fish barriers on tributaries (yr 1).
3. Refine monitoring program based on conceptual model to acquire data needed to test model elements and guide investment strategy (yr 1).
4. Define, review, and refine the adaptive management process for making adjustments as better information becomes available, including who makes future decisions, for all elements of the Program (yr 1-7); e.g., define triggers and time periods necessary for deciding need for change in management direction.
5. Implement baseline monitoring plan under direction of a single umbrella entity as defined in CMARP with linkage to adaptive management process and provision for stakeholder input but provide for responsible agencies to conduct additional monitoring to meet their obligations in the event that needs cannot be met by baseline monitoring plan (yr 1-7).
6. Review the isolated facility decision process as developed and refine adaptive management and monitoring programs as needed to accommodate the decision process needs (yr 1).
7. Prepare annual reports on status/progress and need for adjustments (yr 1-7).
8. Analyze status and need for adjustments of actions for stage 2 (yr 5-7).
9. Complete monitoring studies identified by diversion effects on fisheries team to provide feedback on actual diversion effects of south Delta pumps (yr 2-7).
10. Provide available data on need to reduce bromides, total dissolved solids, total organic carbon, pesticides and heavy metals (yr 5).
11. Provide available data on water quality in south Delta and lower San Joaquin River (yr 1-7).
12. Expand real-time monitoring for enhanced fish protections and flexible operations for water suppliers (yr 1-7).

Water Transfer Framework

The water transfer framework is designed to facilitate and streamline the water transfer process while protecting water rights and legal users of water and addressing and avoiding or mitigating third-party socio-economic impacts and local groundwater or environmental impacts. This would occur through a proposed framework of actions, policies and processes. The first stage implements the processes which will continue in subsequent stages.

1. Establish the California Water Transfers Information Clearinghouse to collect and disseminate data and information relating to water transfers and potential transfer impacts, perform research using historic data to understand water transfer impacts, and provide a forum for discussion and comment on proposed transfers (yr 1).
2. Coordinate with CALFED agencies to formulate policy, under their existing authorities, for required water transfer analysis (yr 1).
3. Begin forecast and disclosure process (DWR and USBR) of potential conveyance capacity in existing export facilities. This would be an on-going activity, occurring in conjunction with hydrologic forecasts (yr 1).
4. Develop a standardized checklist and analysis procedure (SWRCB, DWR, and USBR) to be followed by transfer proponents for proposed transfers (yr 1-2).
5. CALFED agencies work with stakeholder representatives to reduce the conflict between transfer proponents and the SWRCB, DWR, or USBR regarding what water is deemed transferrable under what conditions (yr 1-3).
6. CALFED agencies continue work with stakeholder representatives to resolve conflicts over reservoir refill and carriage water criteria (yr 1-3).
7. CALFED agencies adopt methods to monitor instream transfers and develop associated tracking measures (yr 2-4).
8. CALFED agencies adopt criteria governing the determination of transport costs in state and federal conveyance facilities (both existing and new, if constructed) (yr 2-4).

Water Use Efficiency

The CALFED water use efficiency element focuses on formulation of policies which support implementation of efficiency measures at the local and regional level. The role of CALFED agencies in water use efficiency will be to offer support and incentives through expanded programs to provide planning, technical, and financial assistance. CALFED agencies will also support institutional arrangements that give local water suppliers an opportunity to demonstrate that cost-effective efficiency measures are being implemented. The first stage implements the processes which will continue in subsequent stages.

1. Expand DWR and USBR programs to provide technical and planning assistance

to local agencies and explore new ways of developing assistance and involving other CALFED agencies (yr 1-7).

2. Develop mechanisms for approval authority for urban water management plans (yr 1-3); e.g., approved plans would be a condition for urban areas receiving CALFED benefits.
3. Implement urban MOU process fully with certification of agency implementation plans (yr 3-7).
4. Implement the Agricultural Water Management Council (AB 3616) process fully with endorsement of agency plans under AB3616 and CVPIA (provided that the Council achieves broad stakeholder support) (yr 1-7); e.g., rely on Council to endorse plans of signatory member agencies as condition for receiving CALFED benefits; explore additional ways to build consensus on the process.
5. Seek resolution to legal, institutional, and funding limitations for agricultural and urban water recycling (yr 1-3).
6. Participate in conservation and water recycling projects (yr 3-7); e.g., preferential funding assistance for projects providing multiple CALFED benefits such as agricultural tail water recycling which could benefit fish by reducing diversions, reduce pollutant loading, etc.
7. Implement the methodology for refuge water management which was recently developed, based upon stakeholder and scientific input, including preparation of an *Effective Water Use Plan* and annual reports by each refuge manager (yr 1-7). Consistent with assurance mechanisms for urban and agricultural water users, access to CALFED benefits will be contingent upon continued implementation of the *Effective Water Use Plan* (yr 1-7).

Levees

The focus of the long-term levee protection element of the Program is to reduce the risk to land use and associated economic activities, water supply, infrastructure, and the ecosystem from catastrophic breaching of Delta levees. Levee protection is an ongoing effort which builds on the successes on ongoing programs and consists of:

- *Base-level funding to participating local agencies*
- *Funding of special improvement projects for habitat and levee stabilization to augment the base-level funding*
- *Grant projects to develop best management practices for subsidence control*
- *An advanced measures plan and emergency management plan to more effectively plan for and deal with potential levee disasters*
- *A seismic risk assessment to evaluate performance of the existing levee system during seismic events*

The first stage continues the decades-long process to improve reliability of Delta levees.

1. Develop and implement an outreach, coordination, and partnering program with local landowners including individuals, cities, counties, reclamation districts, resource conservation districts, water authorities, irrigation districts, farm bureaus, other interest groups, and the general public to assure participation in planning design, implementation, and management of levee projects (yr 1).
2. Obtain short-term federal and state funding authority as a bridge between the existing Delta Flood Protection Authority (AB360) and long-term levee funding (yr 1-5).
3. Obtain long-term federal and state funding authority (yr 1-7); e.g., the Corps of Engineers' current Delta Special Study would develop into a long-term Delta levee reconstruction program and the state would be the local cost-sharing partner.
4. Conduct project level environmental documentation and obtain appropriate permits for each bundle (package) of Stage 1 actions (yr 1-7).
5. Implement demonstration projects for levee designs that minimize the need for continuous disruption of habitat from levee maintenance and minimize the need for ongoing mitigation from disrupted habitat (yr 1-7).
6. Coordinate Delta levee improvements with ecosystem improvements (yr 1-7); e.g., coordinate improvements, modify maintenance manuals as appropriate to accommodate ERP actions near levees, separately track levee mitigation costs and ERP costs.
7. Fund levee improvements up to PL84-99, approximately $114 million [$74 million during years 1 through 5 and $40 million during years 6 through 7] in first stage (yr 1-7); e.g., proportionally distribute available funds to entities making application for cost sharing of Delta levee improvements.
8. Further improve levees which have significant statewide benefits, approximately $82 million [$58 million during years 1 through 5 and $24 million during years 6 through 7] in first stage (yr 1-7) ; e.g., statewide benefits to water quality, highways, etc.
9. Coordinate Delta levee improvements with Stage 1 water conveyance, water quality improvements and with potential conveyance improvements in subsequent stages (yr 1-7).
10. Institute the Emergency Management Plan (yr 1-7); e.g., establish $10 million revolving fund, refine command and control protocol, stockpile flood fighting supplies, establish standardized contracts for flood fighting and recovery operations, outline environmental considerations during emergencies.
11. Initiate a subsidence control program to develop and implement BMP's for lands adjacent to levees, approximately $11 million for Stage 1 (yr 1-7).
12. Continue evaluation of seismic risk to integrity of the levee system and effective ways to mitigate that risk (yr 1-7).

Ecosystem Restoration

The CALFED ecosystem restoration program (ERP) is designed to maintain, improve, and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species. A foundation of this program element is the restoration of ecological processes associated with streamflow, stream channels, watersheds, and floodplains. Implementation of the ERP over the 20 to 30 year implementation period will be guided through an ecosystem-based, adaptive management approach. ERP goals and objectives for ecosystem, habitat, and species rehabilitation are designed to produce measurable and progressive improvements to the Bay-Delta ecosystem that should result in a high level of ecosystem health and species recovery that exceeds existing regulatory requirements while improving water supply reliability and water quality of the Bay-Delta Ecosystem. The Stage 1 restoration efforts are structured to accomplish significant improvement in Bay-Delta ecological health through a large scale adaptive management approach in which the actions inform management decisions in later stages of implementation.

Success of ERP Stage 1 actions is also critically dependent on other program elements, including water quality improvement actions throughout the Bay-Delta watershed, levee system integrity actions, and integration with a watershed management strategy and a water transfers market. The priorities for restoration activities will be first on existing public lands as appropriate, second to work with landowners in voluntary efforts to achieve habitat goals including the acquisition of easements, third a combination of fee and easement acquisition, and fourth on acquisition of fee title as necessary to achieve program objectives. Acquisition will be on a willing seller basis and with emphasis on local coordination and partnerships and include appropriate mitigation for agricultural resource impacts.

1. Develop and implement an outreach, coordination, and partnering program with local landowners including individuals, cities, counties, reclamation districts, resource conservation districts, water authorities, irrigation districts, farm bureaus, other interest groups, and the general public to assure participation in planning design, implementation, and management of ERP projects.
2. Conduct project level environmental documentation and permitting as needed for each bundle of Stage 1 actions(yr 1-7).
3. Full coordination with other ongoing activities which address ecosystem restoration in the Bay-Delta system (yr 1-7); e.g., CVPIA, Four Pumps Agreement, etc.
4. Implement habitat restoration in the Delta, Suisun Bay and Marsh, and Yolo Bypass to improve ecological function, facilitate recovery of endangered species, and determine the feasibility and desirability of implementing larger scale habitat restoration in future stages (yr 1-7):
   - Restore major habitat corridors with a mosaic of habitat types along the Mokelumne and San Joaquin Rivers, within the Yolo Bypass, and along

other major fish migration corridors as practicable (yr 1-7).
- Implement tidal wetland restoration pilot projects to test the effectiveness of larger scale restoration at various locations in the Delta.
- Restore large expanses of shallow water habitat in open water areas of the Delta.

5. Implement large-scale, restoration pilot projects on select rivers (possibly Clear Creek, Deer Creek, and the Tuolumne River) that would include implementation of all long-term restoration measures in coordination with the watershed management common program and monitoring of subsequent ecosystem responses to learn information necessary for making decisions about implementing similar restorations in Stage 2 (yr 1-7).
6. Develop an ecosystem water market (potentially $20 million per year) and acquire 100,000 acre-feet of water for critical ecosystem and species recovery needs (yr 1-7).
7. Complete targeted research and scientific evaluations needed to resolve the high priority issues and uncertainties (e.g., instream flow, exotic organisms, and Bay-Delta food web dynamics) to provide direction for implementing the adaptive management process and information necessary for making critical decisions in Stage 2 (yr 1-7).
8. Establish partnerships with universities for focused research (yr 1-7).
9. Complete the remaining 60% of the easements and/or acquisition for the Sacramento River meander corridor identified under the SB 1086 Program [approximately $30 million required]. Provide assurances for and participation by Sacramento River users and landowners that provides indemnification of affected parties against flooding impacts on neighboring landowners and impacts on water diverters (yr 1-7).
10. Acquire flood plain easements, consistent with ecosystem needs along the San Joaquin River in coordination with the Corps of Engineers' Sacramento and San Joaquin River Basins Comprehensive Study (yr 4-7).
11. Continue high priority actions that reduce stressors of direct mortality to fishes (yr 1-7):
    - Aggressively screen existing unscreened or poorly screened diversion on the Sacramento River, San Joaquin River, and tributary streams.
    - Remove select physical barriers to fish passage.
12. Continue gravel management (yr 5-7); e.g., isolate gravel pits on San Joaquin River tributaries and relocate gravel operations on Sacramento River tributaries (most gravel work would be implemented in subsequent stages with designs and plans for ecosystem reclamation of gravel mining sites).
13. Improve research, monitoring, detection, and control of exotic species (yr 1-7):
    - Implement invasive plant management program in Cache Creek.
    - Develop ballast water management program.
    - Develop early-response invasive organism control programs.

14. Explore ways to provide incremental improvements in ecosystem values throughout the Bay-Delta system in addition to habitat corridors described above (yr 1-7); e.g., pursue actions that are opportunity-based (willing sellers, funding, permitting, etc.), provide incremental improvements on private land through incentives, develop partnerships with farmers on "environmentally friendly" agricultural practices, etc.
15. Incorporate ecosystem improvements with levee associated subsidence reversal plans (yr 1-7).
16. Evaluate the feasibility of harvest management to protect weaker stocks (yr 1-7).

Water Quality

The water quality program will consist of a wide variety of actions to provide good water quality for environmental, agricultural, drinking water, industrial, and recreational beneficial uses of water. The majority of current water quality actions rely on comprehensive monitoring, assessment, and research to improve understanding of effective water quality management and on the ultimate control of water quality problems at their sources. The Stage 1 water quality effort focuses on reducing constituents contributing toxicity to the ecosystem and affecting water users (including BOD) and on reducing total organic carbon loading, salinity, and pathogens that degrade drinking water quality. In addition, research and pilot studies are recommended to obtain information prior to implementation of some actions.

1. Prepare project level environmental documentation and permitting as needed (yr 1-7).
2. Coordinate with other CALFED program elements to ensure that in-Delta modifications maximize potential for Delta water quality improvements (yr 1-7).
3. Continue to clarify use of and fine-tune water quality performance targets and goals (yr 1-7).
4. Conduct the following evaluation and abatement mercury work:
   Cache Creek
   - Risk appraisal and advisory for human health impacts of mercury (yr 1-5).
   - Determine bioaccumulation effects in creek and delta (yr 1-4).
   - Source, transport, inventory, mapping and speciation of mercury (yr 1-7).
   - Information Management/Public Outreach (yr 5-7).
   - Participate in stage 1 remediation (drainage control) of mercury mines if federal Good Samaritan protection obtained (yr 3-5).
   - Investigate sources of high levels of bioavailable mercury (yr 4-7).

   Sacramento River
   - Investigate sources of high levels of bioavailable mercury, inventory, map, and refine other models (yr 3-7).
   - Participate in remedial activities (yr 7).

Delta

- Research methylization (part of bioaccumulation) process in Delta (yr 1-2).
- Determine sediment mercury concentration in areas that would be dredged during levee maintenance or conveyance work (yr 3-7).
- Determine potential of ecosystem restoration work on mercury levels in lower and higher trophic level organisms (yr 3-5).

5. Conduct the following pesticide work:
   - Develop diazinon and chlorpyrifos hazard assessment criteria with DFG (yr 1).
   - Develop BMPs for dormant spray and household uses (yr 1-3).
   - Study the ecological significance of pesticide discharges (using $1.5 million of ERP funds) (yr-1-3).
   - Support implementation of BMPs (yr 2-7).
   - Monitor to determine effectiveness (yr 4-7).
6. Conduct the following heavy metals work:
   - Determine spatial and temporal extent of metal pollution (yr 3-7).
   - Determine ecological significance and extent of copper contamination (yr 1-3).
   - Review impacts of other metals such as cadmium, zinc, and chromium (yr 1).
   - Participate in Brake Pad consortium to reduce introduction of copper (yr 1-7).
   - Partner with municipalities on evaluation and implementation of stormwater control facilities (yr 2-5).
   - Participate in remediation of mine sites as part of local watershed restoration and delta restoration (yr 2-7).
7. Conduct the following salinity reduction work:
   - Develop and implement supply water quality management activities to improve supply quality (yr 1-7).
   - Develop and implement a management plan to reduce drainage and reduce total salt load to the valley (yr 1-7).
   - Conduct pilot projects to evaluate the feasibility of water reuse, through agroforestry, of various concentrations of saline water (yr 4-6).
   - Study feasibility of desalination methods including reverse osmosis (yr 7).
   - Study cogeneration desalination (yr 7).
   - Implement real time management of salt discharges (yr 3-7).
8. Conduct the following selenium work:
   - Conduct selenium research to fill data gaps in order to refine regulatory goals of source control actions; determine bioavailability of selenium under several scenarios (yr 1-5).
   - Research interactions of mercury and selenium (yr 2-3).

- Refine and implement real-time management of selenium discharges (yr 1-7).
- Expand and implement source control and reuse programs (yr 1-7).
- Coordinate with other programs (yr 1-7); e.g., recommendations of San Joaquin Valley Drainage Implementation Program, CVPIA) for retirement of lands with drainage problems that are not subject to correction in other ways.

9. Conduct the following sediment reduction work/organochlorine pesticides:
   - Participate in implementation of USDA sediment reduction program (yr 1-7).
   - Promote sediment reduction in construction arenas and urban SW, and other specific sites (yr 1-7).
   - Implement stream restoration and revegetation work (yr 4-7).
   - Quantify and determine ecological impacts of sediments in target watersheds, implement corrective actions (yr 4-7).
   - Coordinate with ERP on sediment needs (yr 1-3).
10. Conduct the following nutrients work:
   - Complete studies of causes for DO sag in San Joaquin River (yr 1-2).
   - Define and implement corrective measures for DO sag (yr 1-7).
   - Encourage regulatory activity to reduce nutrients discharged by unpermitted dischargers (yr 1-7).
   - Develop inter-substrate DO testing in conjunction with ERP (yr 2-4).
   - Study nutrient effects on beneficial uses (yr 4-7).
11. Conduct the following unknown toxicity work:
   - Participate in identifying unknown toxicity and addressing as appropriate (yr 1-7).
12. Other actions specific to drinking water improvements:
   - Control TOC contribution through control of algae, aquatic weeds, agricultural runoff, and watershed improvement (yr 1-7).
   - Study Bromide and disinfection byproduct control and implement at affected sites (yr 1-7)
   - Control of pathogens through control of cattle, urban storm water, sewage, boat discharge, and possibly recreational swimming; includes various projects depending on area of impact (yr 3-7).
   - Study recreational swimming impacts, wild animal impacts (yr 4).
   - Relocate Barker slough intake (yr 7+).
   - MTBE reductions in various areas (yr 3-5).
   - Address water quality problems in terminal reservoirs (yr 3-5).
   - Develop a plan sufficient to meet forthcoming EPA and Department of Health Services standards for brominated disinfection byproducts (by yr 7).
13. Conduct the following turbidity and sediment work:

- Implement protection actions in the upper watershed to reduce sedimentation of fish spawning habitat (yr 1-7).
- Implement erosion control BMPs in the upper watershed (yr 1-7).
- Construct sedimentation basins in urban and suburban areas (yr 1-7).
- Evaluate use of a head control structure on lower Dominici Creek (yr 2-4).
- Perform quantitative analysis of river sediment loads, budgets, and sources (yr 1-7).

Watershed Program

The Watershed Program is designed to be coordinated and integrated with existing and future local watershed programs and to provide technical assistance and funding for watershed activities that support the goals and objectives of the CALFED Bay-Delta Program. The actions during Stage 1 are a mix of watershed coordination, restoration, maintenance, and conservation activities, as well as demonstration projects designed to show benefits to the Bay-Delta system without harm to existing watershed resources.

1. Fund and implement watershed restoration, maintenance, conservation, and monitoring activities that support the goals and objectives of the CALFED Bay-Delta Program (years 1-7).
2. Identify priority locations and implement watershed restoration activities which benefit restoration in the Bay-Delta system (years 1-7).
3. Assist local watershed groups and government agencies to address common issues, including roles and responsibilities, funding support, technical assistance, information exchange, and to ensure effective communication and implementation among government agencies and stakeholder groups (years 1-7).
4. Develop a funding process and provide watershed stewardship funds to build the capacity of locally controlled watershed groups that ensure participation of local landowner groups (years 1-7).
5. Improve the use and usefulness of existing or future watershed clearinghouse functions to assist watershed groups with obtaining information on funding opportunities, technical assistance, and data storage and retrieval (years 1-7).
6. Ensure the completion of project level environmental documentation and permitting; assist with documentation and permitting processes as appropriate (years 1-7).
7. Evaluate the benefits (including economics) that accrue from watershed plans and projects designed to achieve CALFED goals and objectives (yr 1-7).
8. Establish, fund, and maintain watershed restoration and maintenance assistance to aide local watershed groups and private landowners in project concept, design, and implementation (years 1-7).
9. Coordinate with other CALFED and non-CALFED programs on watershed related activities (years 1-7).

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Storage

New storage will be included in the preferred program alternative. Storage of water in surface reservoirs and groundwater basins will provide opportunities to improve the timing and availability of water for all uses when conditions for implementation are satisfied.

South-of-Delta Groundwater Banking and Conjunctive Use - *This requires coordination with local agencies and landowners. This first stage includes construction of several projects. Additional projects, if feasible, could be constructed in later stages.*

1. Develop and implement a framework for groundwater banking and conjunctive use projects (yr 1).
2. Include provisions to protect overlying landowners water rights (yr 1-7).
3. Provide funding assistance for groundwater plan development (yr 1-7).
4. Identify potential projects and local cooperating entities (yr 1-3).
5. Conduct baseline monitoring and modeling (yr 1-5).
6. Conduct field studies (yr 2-7).
7. Project environmental documentation and permitting (yr 3-7).
8. Ensure protection of landowners water rights (yr 1-7).
9. Project design (yr 4-7).
10. Conduct demonstration projects and construct two to three production facilities with target volume of 500,000 acre-feet storage (yr 1-7); e.g., potential options include Madera Ranch, Stockton East, expanded Kern Water Bank, and others.
11. Study additional potential project sites (yr 2-7).

North of Delta Groundwater Banking and Conjunctive Use - *This is primarily a coordination effort with local implementing entities and landowners but could include some public projects. This first stage includes investigations for coordination with new regional surface storage. Projects, if feasible, could be constructed in later stages.*

1. Develop and implement a framework for groundwater banking and conjunctive use projects (yr 1).
2. Include provisions to protect overlying landowners water rights (yr 1-7).
3. Provide funding assistance for groundwater plan development (yr 1-7).
4. Identify potential projects and local cooperating entities and define CALFED role (yr 1-3).
5. Initiate baseline monitoring and modeling (yr 1-7).
6. Initiate field studies (yr 2-7).
7. Project environmental documentation and permitting (yr 3-7).
8. Project design (yr 4-7).

Surface Storage - *Surface storage could be constructed upstream of the Delta, in or near*

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the Delta, and/or storage filled by diversions through the Delta-Mendota Canal or the California Aqueduct. Depending on the amount of storage needed for all water users including environmental uses, new offstream storage and/or expansion of existing onstream reservoirs could add up to several million acre-feet of new storage. A description of three to five of the most promising sites will be available at the start of Stage 1. The first stage will consist of studies, evaluations, and permitting necessary for construction and potentially start on construction if all conditions are satisfied.

1. Identify local cooperating entities and CALFED role (yr 1-3).
2. Environmental documentation (yr 1-5).
3. Feasibility studies (yr 1-5).
4. Field studies (yr 1-5).
5. 404(b)(1) analyses (yr 1-5).
6. Site selection (yr 4-5).
7. Evaluate improvements to potential conveyance to storage (yr 1-5).
8. Permits and operating agreements (yr 5-7).
9. Begin construction if conditions and linkages are satisfied (yr 6-7).

Conveyance

The conveyance element describes three configurations of Delta channels and related facilities for moving water through the Delta and to the major export facilities in the southern Delta:

- *The Delta channels are maintained essentially in their current configuration with some improvements in the southern Delta.*
- *Significant improvements to northern Delta channels would accompany the southern Delta improvements contemplated under the existing system conveyance above.*
- *The contingent strategy of the dual Delta conveyance is formed around a combination of modified Delta channels and a new canal or pipeline connecting the Sacramento River in the northern Delta to the SWP and CVP export facilities in the southern Delta.*

Much of the first stage consists of studies and evaluations of the major conveyance features. This will allow conveyance projects to be ready for permitting and construction in later stages should the projects be necessary to meet Program objectives. Some construction of improvements in the south and north Delta should occur within the first stage to improve conditions for ecosystem and water management reliability.

South Delta Improvements - *South Delta improvements consist of methods to control flow, stage and circulation, improve fish passage, fish screen and salvage facilities, and*

provide SWP/CVP interties upstream and downstream of the export pumps. South Delta conveyance improvements included in Stage 1 would function with either the primary or contingent conveyance strategy.

1. Complete environmental documentation and permitting including 404(b)(1) analysis (yr 1).
2. Design south Delta improvements (yr 1); among others, such improvements could include:
   - Operable fish barrier at head of Old River to improve San Joaquin salmon survival and improve water quality in lower San Joaquin River below the Barrier *(Note: May impair upstream migration of San Joaquin salmon in the fall and increase entrainment of organisms living in the central and southern Delta)*
   - Three south Delta waterway control structures to protect south Delta agricultural water supplies
   - Clifton Court Forebay intake structure
   - Channel enlargement along Old River
   - Modified operation rules, including increased use of full capacity of Banks Pumping Plant linked to improved fish protections (flexible operations)
3. Implement south Delta improvements [balanced to improve water supply and environmental conditions] (yr 2-4).
4. Implement an intertie between the Delta-Mendota Canal (at approximately Mile 8) and California Aqueduct downstream of export pumps (yr 2-4).
5. Construct new Tracy demonstration/testing fish screen and handling facility capable of screening 2,500 cfs at 0.2 fps through-screen velocity and 5,000 cfs at 0.4 fps through-screen velocity (yr 1) *Notes: Screen operation would be under criteria established by NMFS, FWS, and DFG. There may be some stranded costs if the point of diversion is moved sometime in the future. The facility would be operated for the following purposes:*
   - *Improve survival of salvaged fish at the Tracy pumping plant*
   - *Reduce entrainment at the Tracy pumping plant*
   - *Provide valuable information for design of future fish facilities*
6. Convert fish screen demonstration project at Tracy Pumping Plant to production facility and expand capacity if appropriate (yr 4-6).
7. Implement first increment of new south Delta fish screening and fish handling facility at the northeast entrance to Clifton Court Forebay [full module capable of screening 6,000 cfs at 0.2 through-screen velocity and 12,000 cfs at 0.4 fps through-screen velocity] (yr 2-6) ; *Notes: Screen operation would be under criteria established by NMFS, FWS, and DFG. There may be conflicts with higher pumping rates (e.g., over pumping screens or exporting water that is not first screened). Facility would be operated for the following benefits:*
   - *Improve survival of fish in the south Delta near the State export pumping*

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plant
- *Reduce predation of fish in Clifton Court Forebay*
- *Reduce exposure of fish residing in or migrating through the central and south Delta to entrainment*

8. Evaluate (and, if promising, pilot test) benefits/impacts of recirculation of a portion of Delta Mendota Canal flows through the Newman Wasteway to the San Joaquin River for water quality and ecosystem enhancement (yr 1-4).
9. Project environmental documentation and permitting for SWP/CVP intertie (yr 2-4).
10. Design and construct SWP/CVP intertie upstream of export pumps [tie Tracy Pumping Plant intake to Clifton Court Forebay] (yr 5-7+).
11. Implement joint point of diversion for SWP/CVP (This is a SWRCB permit action which would allow the SWP to pump CVP export flows and vice versa (yr 1-7).

North Delta Improvements - *North Delta improvements consist of a new screened diversion from the Sacramento River near Hood to the central Delta and significant channel modifications including setback levees. The screened diversion and associated channels may be implemented in modular stages in order to resolve technical screening and fish passage issues at the appropriate scale. Stage 1 will focus on studies and design prior to construction. Selected channel improvements may be constructed but the majority of the improvements, if any are selected, will be constructed in Stage 2. These Delta channel improvements are the primary conveyance strategy of the preferred program alternative. However, a contingent strategy with dual Delta conveyance [through Delta with some isolated conveyance capacity] is maintained in case through Delta conveyance does not meet Program goals.*

1. Prepare project environmental documentation (yr 1-5).
2. Conduct feasibility studies for screened diversion and fish passage facilities, channel modifications, and habitat improvements (yr 1-5).
3. Conduct field studies (yr 1-5).
4. Prepare environmental documentation for land acquisition (yr 2-3).
5. Acquire land and convert land use for habitat and flood protection improvements (yr 4-6).
6. Obtain permits and operating agreements (yr 4-6).
7. Design selected improvements (yr 4-6).
8. Construct selected improvements including channel improvements such as setback levees, channel dredging, and waterside berms (yr 7).
9. Construct new Hood diversion test facility on the Sacramento River capable of diverting up to 2,000 cfs from the Sacramento River to the Mokelumne River (yr 4-6) *Notes: The facility would have an alignment that would be usable with*

potential future through Delta modifications or isolated facility. The facility would be operated for the following purposes:

- *Test screening efficiency, cleaning and bypass mechanisms*
- *Test upstream passage mechanisms*
- *Enable closing the Delta Cross Channel without compromising interior Delta and export water quality*
- *Improve Delta water quality*
- *Improve cues for migrating fish*

10. Pilot studies for dredge material reuse (yr 1-7).

Isolated Facility - *The isolated facility consists of a new canal or pipeline connecting the Sacramento River in the northern Delta to the SWP and CVP export facilities in the southern Delta. CALFED is retaining the dual Delta conveyance with an isolated facility as a contingent strategy. However, as mentioned above, dual Delta conveyance will only be implemented if through Delta improvements do not meet Program goals and solution principles. The following Stage 1 actions provide progress on initial studies in case the isolated facility is found necessary to meet CALFED objectives.*

1. Perform public health effects studies to more specifically identify the potential health effects of bromide related disinfection byproducts (yr 1-3).
2. Investigate alternative sources of high quality water supply for urban users of Delta water (yr 1-3).
3. Investigate advanced treatment technologies for the removal of salt, bromide, total organic carbon, and pathogens in urban water supplies (yr 1-3)
4. Investigate brine disposal options from membrane treatment of urban water supplies (yr 1-3).
5. Investigate combinations of new supplies and technologies that can minimize salt content of urban water supplies and provide greater public health protection (yr 1-3)
6. Convene an expert panel in a public forum to make recommendations to the governing entity regarding solutions to identified public health issues for urban users of Delta water (yr 4)
7. Based on the decision of the governing entity, conduct the following actions on the preferred option:
   - Prepare project environmental documentation (4-7).
   - Conduct feasibility studies (yr 4-7).
   - Conduct field studies (yr 4-7).
   - Assess right-of-way issues that could impact CALFED's ability to maintain a viable contingency for a potential future habitat corridor and facility right-of-way and take appropriate steps to preserve the preferred right-of-way (yr 4-7).

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